Regulations for

M.Tech. by Research

(For students admitted from the academic year 2019 – 2020)

Faculty of Engineering & Technology

SRM Institute of Science and Technology

Kattankulathur – 603 203

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M. Tech by Research – Regulations

(For students admitted from the academic year 2019 – '20)

R.1.0 Introduction

R.1.1 The Institute provides facilities for research leading to the Degree of Master of Technology by Research [M. Tech. (Research)] in various Engineering disciplines as mentioned in **Appendix—I.**

R.1.2 The M. Tech. (Research) thesis shall be the report of the research work characterized by either discovery of new facts, new interpretation of known facts and theories, an independent design, development of a new instrument or technology, optimization of industrial process parameters, an exhaustive study and criticism of published work, or any applied research work that can be exploited for betterment of the society.

R.2.0 Eligibility

R.2.1 The minimum qualification required for admission to M.Tech. (Research) programme in Engineering is B.E. / B.Tech. / MCA / M.Sc. or equivalent in relevant discipline with 60 percent marks in aggregate (or 6.5 CGPA). While computing the percentage of marks (or CGPA), the marks of all courses of the respective qualifying programme will be considered. The qualifying degree programme for admission to M.Tech. (Research) is mentioned in **Appendix – II**.

R.2.2 Students with degrees (B.E. / B.Tech) in one discipline of Engineering can enroll for M. Tech. (Research) in another discipline of Engineering, if such migration is considered relevant by the Departmental Research Committee (DRC). In all other cases, the decision must be made on case to case basis depending on the fields involved, proposed research programme and academic preparation of the candidate.

R.2.3 The constitution of DRC is as follows.

i) Head of the Department (Ex-officio) - Chairman
ii) Two Professors (by rotation for one year) - Member
iii) Two Associate Professors (by rotation for one year) - Member
iv) Two Assistant Professors (by rotation for one year) - Member

The HOD shall ensure that all academic groups of a department are well represented. A teacher who is enrolled for a degree at the Institute or outside cannot be a member of the DRC.

The Committee shall be reconstituted at the beginning of every academic year.

The composition of the DRC shall need approval of the Director.

The functions of DRC related to the M.Tech. (Research) programme are given below.

i. To conduct the process of selection of the candidates for admission to M.Tech. (Research).
ii. To recommend supervisors for the candidates.
iii. To constitute Masters Scrutiny Committees.
iv. To continuously monitor the progress of work of all M.Tech. (Research) students and to recommend remedial measures for poor performance, if any.
v. Any other duty assigned by the HOD related to M.Tech. (Research) programme.

R.2.4 The various categories of candidates eligible for admission to M.Tech. (Research) programme are:

i) Full time
ii) Sponsored candidates (Institute/Research Organization/Industry)
iii) SRMIST regular employees(Technical staff)

R.3.0 Admission Procedure

R.3.1 Candidates desirous of pursuing M.Tech. (Research) programme should apply online through admissions portal of SRMIST. Technical staff of the Institute should get permission from the Director (E&T) through proper channel and apply online.

R.3.2 The applications received will be sent to the Director (E&T) who will forward the same to the Head of the Department. The DRC shall screen the applications and call the candidates for interview.

R.3.3 The DRC shall consider the following aspects during the interview.

I. Candidate possesses the competence for the proposed research;
II. Research work can be suitably undertaken at the Institution/College;
III. Proposed area of research can contribute to new/additional knowledge.

R.3.4 The allocation of Research Supervisor for a selected student shall be decided by the DRC depending on the availability of supervisor in the research area of the student and research interests of the student as indicated by him/her.

R.3.5 The respective DRC will forward the list of selected candidates along with the applications of all the candidates to the Director (Research) through the Director (E&T).

R.3.6 The Director (Research) will seek the approval of the Vice-Chancellor for the provisional registration of the selected candidates.

R.3.7 The Candidates whose registration has been approved by the Vice Chancellor shall be provisionally admitted to the M.Tech (Research) Programme by the Director (Research) with intimation to the Director (E&T), HOD, supervisor, the candidate, and the sponsoring institution (if any).

R.4.0 Allocation of Supervisor

R.4.1 All candidates for M. Tech. (Research) degree are required to carry out their research work under the guidance of a supervisor on recommendation of the DRC. Normally the DRC will recommend one Supervisor. However, in case of inter-disciplinary research across two departments, a co-supervisor may be appointed on request of the supervisor.

R.4.2 A sponsored student desiring to work in his/her place of employment should have a research coordinator from his/her organization. The research coordinator so proposed must have a Ph.D. Degree or at least 10 years of relevant professional experience. In case of Academic Institutes, a Ph.D. Degree is necessary to become a research coordinator.

R.4.3 When a supervisor of a candidate happens to be away from SRMIST, for more than 6 months, he/she may continue to guide the candidate, but a supervisor belonging to the same faculty of SRMIST shall be officially nominated as a co-supervisor by the DRC of the department.

R.5.0 Provisional Registration

R.5.1 On receiving the letter of provisional admission, every student joining the M. Tech. (Research) programme shall meet the Head of the Department and pay the prescribed fees within 10 days.

On admission of the candidate to the programme the DRC will constitute the Masters Scrutiny Committee (MSC) of the candidate.

R.6.0 Masters Scrutiny Committee (MSC)

R.6.1 A Masters Scrutiny Committee shall be constituted on recommendation of the DRC of the department and approved by VC. It shall consist of the following members:

1.	HOD / Senior person	- Chairman
2.	Supervisor	- Convener
3.	Co-Supervisor (if applicable)	- Member
4.	One faculty member from the department nominated by DRC	- Member
5.	One faculty member from the same or a related department nominated by DRC	- Member

R.6.2 Within a month of provisional admission, the supervisor shall convene the meeting of MSC. The committee will examine the research proposal presented by the student and recommend the topic for the research and identify the course to be taken by the candidate. The course on research methodology (4 credits) is compulsory. The committee also prescribes three or four courses which are relevant to the field of research of the candidate with minimum 9 credits.

R.6.3 The MSC shall always record its minutes with appropriate reasoning and enclosures, duly signed during the meeting. The convener will send the copy of the minutes of the meeting to the Director (Research) through Director (E&T).

R.6.4 When a student joins at the beginning of a semester, he/she may be advised by the supervisor (s) to attend classes of recommended courses even before the first MSC meeting. In case the courses approved by the MSC are different from the courses being taken by the student, the student may at his/her choice discontinue or complete the courses recommended by the supervisor(s). But he must attend the courses approved by the MSC.

R.7.0 Semester Registration

R.7.1 A student enrolled in the M. Tech. (Research) programme will be required to register in every semester by paying tuition fees and other Institute dues.

R.7.2 Failure to do semester registration for two consecutive semesters will result in termination of studentship, which can be restored by the VC on consideration of all circumstances, payment of arrear fees and extension of thesis submission date.

R.7.3 It shall be the responsibility of the student to bring any deviation in his status in matters of course of work, registration, withdrawal etc. to the attention of Director (Research) at the time of semester registration, if he has not done so earlier.

R.7.4 A student may be exempted from semester registration by Director (Research)/Director (E&T) if he submits thesis within 30 days of scheduled semester registration. If he fails to submit thesis within 30 days, he must do semester registration before the thesis is accepted for evaluation.

R.8.0 Structure of Programme

R.8.1 The coursework may be chosen from the existing PG (M. Tech.) programmes of the Department or from those of other departments. The student of M. Tech. (Research) programme must be registered not more than 20 credits per semester (except for final semester). A student must acquire minimum of 80 credits during the semester of thesis submission before being awarded the M. Tech. (Research) degree.

R.8.2 M.Tech. (Research) students enrolled in PG courses are subject to the same regulations as applicable to other students in the courses with regard to attendance, discipline, assessment and grading.

R.8.3 One credit course on Seminar and Technical Writing is compulsory for all students in every semester, where the students shall learn and practice essential writing and presentation skills, and attend seminars by reputed engineers and scientists organized by the Departments. Evaluation of the course on Seminar & Technical Writing and award of grades will be done by MSC based on the following four components:

a) Attendance in seminars/conferences (at least four) and written report(s) on the contents learnt.
b) Term paper based on Literature review and analytical work.
c) Poster on a topic with rich graphic components.
d) Patent Search (at least one) and summary of at least two related patents.
e) The submitted documents (the best ones) will be archived for study by future students.

R.8.4 In the second semester, on completion of course works, the student should register for comprehensive viva voce, STW and research credits.

Details	**No. of credits**
Part A: Academic credits	
(a) RME001 - Research Methodology	4
(a) Course work (3 or 4 courses)	9 (min)
Part B: Seminars	
(a) STW001 - STW004 - Seminar & Technical Writing	4
(b) MTR001 - Comprehensive Examination	4
(c) MTR003 - Research Proposal (including seminar)	2
(d) MTR007 - Synopsis Seminar	2

Part C: Research credits	
(a) MTR002 - Research Phase I (Literature review, Research gap identification, problem formulation and objectives)	15
(b) MTR004 - Research Phase II (Mathematical Modelling / Simulation / Experimental setup / Experimentation)	16
(c) MTR005 - Research Phase III (Consolidation and comparison of results / Inferences / Findings / Research article preparation)	14
(d) MTR006 - Journal article publications (Indexed in Scopus/Web of Science)	2
(e) MTR008 - Thesis evaluation	4
(f) MTR009 - Viva voce exam	4
Total Part A, Part B & Part C	**80 (min)**

R.8.5 The evaluation pattern for research phases –I, II and III are shown in the Table below.

Evaluation of Research Phases

Evaluation	**Weightage**
(a) Review-I	20%
(b) Review-II	30%
(c) Review-III with an in-term report	50%

R.8.6 The general semester-wise guidelines are given below.

Guidelines

Category	**Semester 1**	**Semester 2**	**Semester 3**	**Semester 4**	**Credits**
Research Methodology and Course Work	13 (min) (3 or 4 courses)	--	--	--	13 (min)
Seminar / Technical Writing	1	1	1	1	4
Comprehensive Examination	--	4	--	--	4
Research Proposal (including seminar)	--	--	2	--	2
Synopsis Seminar	--	--	--	2	2
Journal article publications (Scopus/Web of Science indexed)	-	-	-	2	2
Research work	--	15 (phase 1)	16 (phase 2)	14 (phase 3)	45
Thesis evaluation	-	-	-	4	4
Viva Voce	--	--	--	4	4
Semester- wise Credits	14-17	20	19	27	-
Total Course Credits					80 (min)

R.8.7 The comprehensive Examination: The written and viva-voce examination carries four credits which will be conducted by MSC, covering basic courses in the field.

Letter Grades and Grade Points (GP)

Based on the performance in each category under academic credits / seminars / research credits, the student is awarded a final letter grade. The letter grades and the corresponding grade points are as follows.

Letter Grade	Grade Points	Range of Marks
O (Outstanding)	10	95-100
A+ (Excellent)	9	90-94
A (Very Good)	8	85-89
B+ (Good)	7	75-84
B (Above Average)	6	65-74
C (Average)	5	55-64
P (Pass)	4	50-54
F (Fail)	0	<50 Failure due to insufficient marks in the course
Ab (Absent)	0	Failure due to non-appearance in the examination

Grade Card

Class/Distinction will be awarded to the students after they successfully complete the M.Tech (Research) programme as per norms given in the following table:

Category	CGPA	Class /Distinction
Students who successfully complete the M.Tech (Research) programme within the time duration of six semesters	≥ 5 &< 5.5	Pass
	≥ 5.5 &< 6	Second Class
	≥ 6 &< 8.5	First Class
	≥ 8.5 (without F or Ab or I or temporary withdrawal in any Semester)	First Class with distinction
	≥ 8.5 (with F or Ab or I in any semester)	First Class
Students who complete beyond 6 semesters	≥ 5	Pass

R.9.0 Comprehensive Examination and Confirmation of Registration

R.9.1 **Comprehensive Examination:**

a) After successful completion of the course work, the student has to appear for the comprehensive examination. The objective of the comprehensive examination is to ascertain a student‘s academic preparedness to pursue a rigorous research programme, both during M. Tech. (Research) registration and beyond.

b) The Comprehensive Examination for M. Tech.(Research) will be held separately for each student. The credit will be given on the successful

completion of comprehensive examination. If the student passes in the comprehensive examination, the student shall be eligible to appear for the research proposal seminar. If the student does not pass the examination, the student shall be given one more opportunity to appear for the exam within two months of the first exam. In case, the student fails to successfully complete the comprehensive examination within the prescribed time limit, student's provisional registration shall be cancelled.

R.9.2 **Confirmation of Registration:**

a) The provisional registration of the M.Tech. (Research) student will be confirmed after completion of the following steps: (a) the candidate has successfully completed all the assigned course works, (b) successfully completed the comprehensive examination, (c) should submit the details of the research proposal to the MSC and (d) delivered an open seminar to the satisfaction of the MSC. Normally this should be carried out on completion of 10 months, but within 15 months of the date of admission.

b) The chairman of MSC will send the minutes of meeting to Director (Research) for confirmation of registration. The Director (Research) will issue the confirmation order.

c) At the end of every semester, the Controller of Examinations (COE) will issue a grade card listing all the courses and the grades obtained including research credits and Seminar and Technical Writing courses.

R.10.0 Submission of Synopsis

R.10.1 Upon satisfactory completion of the research work and after the publication of at least one research paper in Journals (Indexed in Scopus/Web of Science), the student is permitted to submit the synopsis of the Research work to the Controller of Examinations.

R.10.2 Prior to submission of the synopsis, copies of the synopsis and the draft thesis should be handed over to the members of the MSC at least a week before the date of the seminar. The student shall make a synopsis seminar in the Department that may be open to all faculty members, research students and members of MSC for getting feedback and comments, which may be suitably incorporated into the synopsis and thesis under the advice of the supervisor.

R.10.3 After the approval of the research work reported in the synopsis by the MSC, the Supervisor shall forward 5 hard copies of the synopsis of the proposed thesis, with a soft copy on CD to the Controller of Examinations along with a panel of at least six names as (Indian) examiners for adjudication of the thesis.

R.11.0 Submission of Thesis

R.11.1 A student for the M.Tech. (Research) degree can submit his thesis after successful completion of at least 2 years from the date of admission. The maximum period for submission of thesis is 4 years from the date of admission for all candidates.

R.11.2 While submitting for evaluation, the thesis shall have an undertaking from the student and a certificate from the Supervisor attesting to the originality of the work, vouching that there is no plagiarism after testing the thesis with a Plagiarism software recommended by SRMIST and that the work has not been submitted for the award of any other degree / diploma of the same Institution where the work was carried out, or to any other Institution.

R.11.3 The student shall submit 5 hard copies of the thesis along with a soft copy on CD to the Controller of Examinations through proper channel. The thesis must be submitted within one month after the MSC approves the synopsis. If the student fails to submit the thesis within one month, he will need to pay the thesis processing fee once again. In any case, thesis submission beyond 4 years from the date of admission is not permitted.

R.12.0 Evaluation of Thesis

R.12.1 The thesis submitted by the student shall be evaluated by his/her supervisor and two examiners nominated by Vice Chancellor from among the panel of members recommended by the supervisor.

R.12.2 The Controller of Examination shall take steps as deemed necessary to enable the reports of the Examiners to be received as quickly as possible.

R.12.3 In the event of delay of more than 4 months in receiving the thesis evaluation report from a selected examiner, the Controller of Examination may change the examiner to the next available choice in the approved panel, if he is convinced that there is no hope of receiving the evaluation report from the chosen examiner.

R.12.4 The examiners including supervisor shall evaluate the thesis and provide a detail report of the thesis. They shall also give the marks (in percentage) based on their evaluation of the thesis.

Weightage of marks for thesis evaluation

Examiner	Weightage
(a) Supervisor	20%
(b) External Examiner - I	40%
(c) External Examiner - II	40%

R.12.5 On receipt of the reports from the Examiners the following procedure shall be adopted.

a. The examiners are unanimous in recommending the award of the degree without any modification of the thesis. This is a clear case for going for the final requirement of viva-voce.

b. The examiners are unanimous in recommending the award of the degree but at least one of the examiners has suggested modification and/or has asked for clarifications. The candidate in that case shall make modifications and provide the clarifications as suggested within a time to be fixed by the MSC. These may be sent to the examiners, if so desired by them, or otherwise felt appropriate by Controller of Examination.

c. One of the examiners does not recommend the award of the degree and rejects the thesis whereas the other external examiner recommends the award. The MSC in such a case may either ask the candidate to modify the thesis as suggested within a given time not less than four months and send the modified thesis to the same examiner again, or, recommend to the Controller of Examination the appointment of another external examiner and send the thesis to him in its original form. The third examiner will be provided with copies of the evaluation reports of both examiners, with the names of the examiners deleted and supervisors' reports. The third examiner is expected to address explicitly to the observations of the original examiners. If the objections are adequately dealt with to the satisfaction of the third examiner, the MSC and the Director, the candidate will be declared successful, else he will be declared failed.

d. If both the examiners reject the thesis, then the Controller of Examination on the recommendation of the MSC, permit submission of a revised thesis on an additional payment of the prescribed fee, after a suitable time to be fixed by Controller of Examination.

e. The revised thesis shall be referred for assessment to two examiners selected from a new panel of six experts recommended by the Supervisor. The new examiners will be provided with copies of earlier thesis, examiners' reports and details of changes made, in addition to the revised thesis.

f. The examiners need to respond specifically to the observations of the earlier examiners and the changes made by the student before re-submission. If the two new reports are unanimous and favorable, the student shall be awarded the degree.

R.13.0 Viva Voce Examination

R.13.1 Once the reports of the examiners have been accepted as satisfactory, the candidate will have to defend the thesis before a viva voce board consisting of all MSC members and one of the external examiners. If none of the external examiners is available, viva-voce can be conducted by the MSC members with an observer from within or outside the Institute nominated by the Director. The defense will be open where faculty members and students of the parent as well as other departments will be invited. The evaluation, however, will be done by the MSC along with the external examiner. The external examiner may either be one of the experts who have already adjudicated the thesis or be another expert appointed for the purpose. The viva voce board may recommend changes in the thesis.

R.13.2 If the viva voce board is not satisfied, the candidate has to appear again before the board after elapse of three months. The MSC shall recommend to the Controller of Examination the award of the M. Tech. (R) degree if the viva voce is satisfactory and all other requirements have been fulfilled.

R.13.3 On completion of the viva voce, the student will submit two copies of the revised thesis in prescribed format and two copies in electronic media, which, will be archived in Institute and Departmental Libraries.

The evaluation of the viva-voce exam shall be carried out based on the following Table.

Weightage of marks for the viva-voce Examination

Examiner	**Weightage**
(a) Supervisor	20%
(b) External Examiner - I	30%
(c) External Examiner - II	30%
(d) MSC excluding supervisor	20%

R.14.0 Award of Degree

If the performance of the student in the Oral examination is satisfactory, he/she will be awarded M.Tech. (Research) degree on the recommendation of the Academic council and with the approval of the Board of Management of SRMIST.

Appendix – I

List of Engineering disciplines to M.Tech (Research) programmes

1. Aerospace Engineering
2. Automobile Engineering
3. Biotechnology
4. Bio-medical Engineering
5. Civil Engineering
6. Chemical Engineering
7. Computer Science and Engineering
8. Electronics and Communication Engineering
9. Electrical and Electronics Engineering
10. Electronics and Instrumentation Engineering
11. Food Process Engineering
12. Genetic Engineering
13. Information Technology
14. Mechanical Engineering
15. Mechatronics Engineering
16. Nanotechnology
17. Software Engineering

Appendix – II

Qualifying degree programmes for admission to M.Tech. (Research)

Discipline	**Eligibility** (A basic degree or equivalent in the following with 60 percent marks in aggregate (or 6.5 CGPA)
Aerospace Engineering	B.E / B.Tech in Mechanical Engineering, Production Engineering, Manufacturing Engineering, Automobile Engineering, Aerospace Engineering, Mechatronics Engineering, Electrical and Electronics Engineering, Electronics & Communication Engineering, Instrumentation and Control Engineering, Electronics & Instrumentation Engineering, Electronics & Instrumentation Engineering, Computer Science Engineering, Information Technology, Software Engineering (or) its equivalent.
Automobile Engineering	B.E / B.Tech in Mechanical / Automobile/ Aeronautical / Mechatronics/ Production / Electrical / ECE / EEE / Electronics / Instrumentation & Control Engg. Equal Proportion to both streams of Mechanical and Electrical Engineering will be considered in selection.
Biomedical Engineering	B.E / B.Tech in Biomedical Engineering / Biomedical & Instrumentation Engineering / ICE / EIE / Biotechnology / Nanotechnology / Medical Electronics (or) M.Sc.(Electronics / Medical Electronical / Applied Electronics) (or) M.Sc.(Physics / Medical Physics / Bio-Physics) (or) M.Sc. (Bio-informatics / Biomedical Informatics / Biotechnology) (or) MBBS / BPT / BOT (or) its equivalent.
Biotechnology	B.E / B.Tech. in Chemical Engineering / Bio-Technology / Bio-Chemical Engineering / Genetic Engg. / Bioinformatics / Biomedical Engg. / Biomedical & Instrumentation Engg. / Bioprocess Engg. / Food Process Engineering (or) B.Pharm (or) M.Sc. (in any branch of Life Sciences / Biotechnology) (or) its equivalent.
Chemical Engineering	B.E / B.Tech. in Chemical Engineering / Electrochemical Engg. / Petrochemical Engg./ Bioprocess Engg. / Food Process Engineering (or) its equivalent
Civil Engineering	B.E / B.Tech. in Civil / Civil Infrastructure Engg. / Architectural Engg. (or) B.Arch. (or) its equivalent.

Computer Science and Engineering	B.E / B.Tech in CSE / IT / SWE / ECE / EEE / EI (or) MCA (or) M.Sc (CSE / IT) (or) its equivalent.
Electrical and Electronics Engineering	B.E / B.Tech. in ECE / ICE / EEE / EIE (or) its equivalent.
Electronics and Communication Engineering	B.E / B.Tech. in ECE / ICE / EEE / EIE / M.Sc. (Electronics / Applied Electronics) / M.Sc. (Physics - Special Electronics) (or) its equivalent.
Electronics and Instrumentation Engineering	B.E / B.Tech. in ECE / ICE / EEE / EIE / M.Sc. (Electronics / Applied Electronics) / M.Sc. (Physics - Special Electronics) (or) its equivalent.
Food Process Engineering	B.E / B.Tech. in Food Process / Chemical / Biotechnology / Agricultural Engineering/ Food Processing and Preservation Technology/ Food Technology/ M.Sc in Food Science / any branch of Life Sciences / Home Science / Nutrition & Dietetics (or) its equivalent.
Genetic Engineering	B.E / B.Tech in Genetic Engineering / Biotechnology / Industrial or Medical or General or Food Biotechnology / Biochemical Engineering / Bioinformatics / Bioprocess Engineering (or) B.Pharm (or) B.V.Sc. (or) B.F.Sc. (or) B.Sc. (Agri) / B.Sc. (Forestry) (or) MBBS (or) M.Sc in any branch of Life Sciences (or) its equivalent.
Information Technology	B.E / B.Tech. in CSE / IT / SWE (or) M.Sc. (CSE / IT) (or) MCA (or) its equivalent.
Mechanical Engineering	B.E. / B.Tech. in Mechanical Engineering / Automobile Engineering / Chemical Engineering / Electrical & Electronics Engineering / AMIE (Mechanical Engineering) / AMAeSI / IMechE / M.Sc.(Physics) (or) any equivalent degree in the above discipline.
Mechatronics Engineering	B.E / B.Tech in Mechanical Engineering, Production Engineering, Manufacturing Engineering, Automobile Engineering,Aerospace Engineering, Mechatronics Engineering,Electrical and Electronics Engineering, Electronics & Communication Engineering, Instrumentation and Control Engineering, Electronics & Instrumentation Engineering, Electronics & Instrumentation Engineering,Computer Science Engineering, Information Technology, Software Engineering (or) its equivalent.

Nanotechnology	B.E /B.Tech. (Any Specialization), M.Sc (Physics / Materials Science / Chemistry / Applied Chemistry / Bio Chemistry / Biotechnology) with mathematics as one of the subjects at B.Sc level (or) its equivalent.
Software Engineering	B.E / B.Tech. in CSE / IT / SWE / ECE / EEE /ETE /Mechatronics/ EIE & ICE (or) MCA (or) M.Sc. (CS / CST / IT / SW / Electronics / Applied Electronics) (or) any equivalent degree in the above Disciplines